MODULE 6
Infants and Children

Lesson 6-1
Infants and Children

Objectives

Objectives Legend

C = Cognitive P = Psychomotor A = Affective

1 = Knowledge level
2 = Application level
3 = Problem-solving level

COGNITIVE OBJECTIVES

6-1.1 Describe the unique characteristics of the anatomy and physiology of the infant and child.

6-1.2 Describe the possible behavior of the ill or injured infant or child (age specific).(C-3)

- infants
- toddlers
- pre-school
- school age
- adolescent

6-1.3 Describe the importance of maintaining an open airway.

6-1.4 Indicate various causes of respiratory emergencies.(C-1)

6-1.5 Differentiate between respiratory distress and respiratory failure.(C-3)

6-1.6 Describe the signs and symptoms of respiratory distress and respiratory failure.

6-1.7 Summarize emergency medical care strategies for respiratory distress and respiratory failure.(C-1) .

6-1.8 List the steps in the management of foreign body airway obstruction.(C-1)

6-1.9 Describe the techniques of suctioning the infant and child.

6-1.10 Describe the components of and approach to the assessment of an infant or child.

6-1.11 Understand the special needs of a newborn in the pre hospital setting

6-1.12 Describe the normal respiratory and heart rates for the newborn

6-1.13 Understand the need for warming, drying, suctioning and stimulating the newborn

6-1.14 List the steps in newborn resuscitation and the indications for supplemental oxygen, assisted ventilations and chest compressions

6-1.15 Identify nine common problems associated with infants and children, including signs and symptoms and emergency care.

6-1.16 Identify the signs and symptoms of shock (hypoperfusion) in the infant and child patient.(C-1)

6-1.17 Compare the signs and symptoms of compensated and decompensated shock.

6-1.18 State the usual cause of cardiac arrest in infants and children versus adults.(C-1)

6-1.19 List the common causes of seizures in the infant and child patient.(C-1)

6-1.20 Describe the management of seizures in the infant and child patient.(C-1)

6-1.21 Describe the effects of trauma on various areas of the body

6-1.22 Discuss the field management of the infant and child trauma patient.(C-1)
6-1.23 Explain the modifications for spinal immobilization for the infant and child
6-1.24 Summarize the indicators of possible child abuse and neglect.(C-1)
6-1.25 Describe the medical legal responsibilities in suspected child abuse.(C-1)
6-1.26 Recognize need for EMT-Basic debriefing following a difficult infant or child transport.(C-1)
6-1.27 Explain the role of the family when assessing, treating and transporting the infant or child.

AFFECTIVE OBJECTIVES

6-1.28 Explain the importance of interacting with the family when assessing, treating and transporting an infant or child.
6-1.29 Explain the rationale for having knowledge and skills appropriate for dealing with the infant and child patient.(A-3)
6-1.30 Attend to the feelings of the family when dealing with an ill or injured infant or child.(A-1)
6-1.31 Recognize the provider's emotional response when caring for infants or children.(A-1)

PSYCHOMOTOR OBJECTIVES

6-1.32 Demonstrate how to open the airway of the pediatric patient.
6-1.33 Demonstrate the techniques of foreign body airway obstruction removal in the infant.(P-1,2)
6-1.34 Demonstrate the techniques of foreign body airway obstruction removal in the child.(P-1,2)
6-1.35 Demonstrate the assessment of the infant and child.(P-1,2)
6-1.36 Demonstrate how to asses a newborn
6-1.37 Demonstrate how to warm, dry, suction and stimulate the newborn
6-1.38 Demonstrate how to provide blow-by oxygen to the newborn
6-1.39 Demonstrate how to provide assisted ventilations to the newborn
6-1.40 Demonstrate how to perform chest compressions on the newborn
6-1.41 Demonstrate the sizing technique for the selection of infant and child bag-valve-masks and oxygen delivery devices.
6-1.42 Demonstrate bag-valve-mask artificial ventilations for the infant.(P-1,2)
6-1.43 Demonstrate bag-valve-mask artificial ventilations for the child.(P-1,2)
6-1.44 Demonstrate oxygen delivery for the infant and child.(P-1,2)
6-1.45 Demonstrate suctioning techniques for the infant and child.(P-1,2)
6-1.46 Demonstrate how to provide manual stabilization of the head and cervical spine.
6-1.47 Demonstrate how to open the airway of the pediatric patient with suspected spinal injury.
6-1.48 Demonstrate how to properly size and apply a cervical collar to the pediatric patient.
6-1.49 Demonstrate the modifications for spinal immobilization for the infant and child

Preparation

Motivation:

Infant and child patients often cause anxiety for the pre hospital care provider. This is caused by a lack of dealing with this special population as well as a fear of failure. Understanding the special factors involved, such as body size, developmental considerations and normal ranged vital signs of infant and child patients is important in their emergency medical care.
A child with severe respiratory distress will deteriorate into respiratory failure and circulatory collapse, eventually resulting in respiratory arrest. The use of oxygen can block this progression and may even reverse it to some degree. When possible, deliver humidified oxygen and allow the child to remain in the parent's lap. When the child is calm, the oxygen demand will be lessened. Have the parent accompany the child in the ambulance. There is no contraindication to high concentration oxygen in the infant or child patient.

Prerequisites:

BLS, Preparatory, Airway, Patient Assessment, History and Physical Exam for Medical and Trauma Patients.

MATERIALS

AV Equipment:

Utilize various audio-visual materials relating to infants and children. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure meeting the objectives of the curriculum. Video demonstrating a child experiencing the different phases of respiratory distress.

EMS Equipment:

Exam gloves, stethoscope, penlight, appropriate sized blood pressure cuff, Bag-Valve-Mask in pediatric sizes, mask for BVM in child and infant sizes, oral airways, suction catheters, portable suction unit, rigid suction catheters, nasal cannulas, non-rebreather mask, manikins, tongue depressor, lubricant, oxygen tank and regulator and paper cup. Pediatric cervical collars, towels, tape, straps, infant care seat, KED, short backboard, long backboard, Child resuscitation manikin, Infant resuscitation manikin, Infant airway training manikin. Neonatal Resuscitation Manikin Blanket or Infant Swaddler, Equipment for providing blow-by oxygen to the newborn, Mask for a BVM in newborn size, BVM in newborn size

Reference Material	Instructors must refer to the latest guidelines of the AHA regarding airway management and cardio-pulmonary resuscitation.

PERSONNEL

Primary Instructor:	One EMT-Basic instructor, knowledgeable with infants and children.
Assistant Instructor:	The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in infant and child emergencies.
Recommended Minimum Time to Complete:	Three hours

Presentation

Declarative (What)

I. Preparatory
  A. The human body
    1. Developmental concerns
      a. Newborns and infants - birth to 1 year of age.
        (1) Minimal stranger anxiety.
        (2) Do not like to be separated from parents.
        (3) Do not want to be suffocated by an oxygen mask.
        (4) Need to be kept warm - make sure hands and stethoscope are warmed before touching child.
        (5) Breathing rate best obtained at a distance - watch chest rise, note color and level of activity.
      b. Toddlers - 1 year to 3 years
        (1) Do not like to be touched.
        (2) Do not like being separated from parents.
        (3) Do not like having clothing removed. Remove, exam, replace.
        (4) Do not want to be suffocated by an oxygen mask.
        (5) Assure child that he was not bad. Children think their illness/injury is punishment.
        (6) Afraid of needles.
        (7) Fear of pain.
        (8) Should be examined trunk to head approach. This is done to build confidence. It should be done before child becomes agitated.
      c. Preschool - 3 years to 6 years
        (1) Do not like to be touched.
        (2) Do not like being separated from parents.
        (3) Do not like having clothing removed. Remove, exam, replace.
        (4) Do not want to be suffocated by an oxygen mask.
        (5) Assure child that he was not bad. Children think that the illness/injury is a punishment.
        (6) Afraid of blood.
        (7) Fear of pain.
        (8) Fear of permanent injury.
        (9) Modest.
      d. School Age - 6 years to 12 years
        (1) Afraid of blood.
        (2) Fear of pain.
        (3) Fear of permanent injury.
        (4) Modest.
        (5) Fear of disfigurement.
      e. Adolescent - 12 years to 18 years
        (1) Fear of permanent injury.

(2) Modest.
(3) Fear of disfigurement.
(4) Treat them as adults.
(5) These patients may desire to be assessed privately, away from parents or guardians.

B. Airway
1. More anterior than the adult - less head tilt needed to open the airway.
2. Smaller airway than adult - blocked easily by secretions or blood
3. Large tongue in relation to jaw size - likely to cause obstruction when child is unresponsive.
4. Infants prefer to breathe through their nose - nasal obstruction can cause respiratory distress.

C. Breathing
1. Small children are dependent upon contraction of the diaphragm to breathe.
2. Children in respiratory distress compensate rapidly by increasing their rate of breathing and using their accessory muscles, which causes fatigue.
3. Increased work of breathing is demonstrated by nasal flaring and intercostal retractions.
4. Slow pulse (Bradycardia) is a sign of hypoxia in the pediatric patient.

D. Circulation
1. Children compensate rapidly in shock by increasing heart rate and vasoconstricting then decompensate rapidly.
2. Perfusion in the child is assessed by determining the heart rate, distal pulses, mental status, capillary refill and skin color and temperature.
3. Hypovolemia can develop from vomiting and/ or diarrhea in children.
4. Blood pressure is a poor indicator of perfusion status in the pediatric patient.

II. Airway
A. Essential skills - review from module 2-1, Airway, with emphasis on infants and children.
B. Specific skills
1. Airway opening
a. Position to open airway is different - head-tilt chin-lift - do not hyperextend.
b. Jaw thrust with spinal immobilization.
2. Suctioning
a. Sizing
b. Depth
c. Technique

3. Clearing complete obstructions
    a. Infants <1 year old
        (1) Back blows/chest thrusts
        (2) Visual foreign body removal
    b. Children >1 year old
        (1) Abdominal thrusts
        (2) Visual foreign body removal
4. Airway adjuncts
    a. Oral airways
        (1) Adjunct, not for initial artificial ventilation
        (2) Should not have a gag reflex
        (3) Sizing
        (4) Techniques of insertion - use tongue depressor.
            (a) Insert tongue blade to the base of tongue.
            (b) Push down against the tongue while lifting upward.
            (c) Insert oropharyngeal airway without rotation following oropharyngeal curvature.
    b. Nasal airways
        (1) Adjunct not for initial artificial ventilation
        (2) Sizing
        (3) Technique of insertion
        (4) Should not be used in head trauma

III. Oxygen Therapy
A. Oxygen delivery
1. Nonrebreathers
2. Blow by techniques
    a. Hold tubing no more than two inches from mouth and nose.
    b. Insert tubing into a paper cup
B. 1. Artificial ventilation
2. Mask sizing/bag sizing
3. Trauma considerations
4. Mask seal
    a. Two hand
    b. One hand
5. Mouth-to-mask artificial ventilation
6. Use of bag-valve-mask
    a. Squeeze bag slowly and evenly enough to make chest rise adequately.
    b. Rates for child and infant are 20 breaths per minute.
    c. Provide oxygen at 100% concentration by using an oxygen reservoir.

IV. Assessment

A. General Principles of Pediatric Exam
    1. Children differ from adults, but also differ from each other depending on age
    2. Large amounts of clinical information can be obtained by observation before approaching the child
        a. Child often anxious and scared by presence and examination of EMT as opposed to adults who are often relieved
    3. It is important to maintain a calm and relaxed manner when dealing with a pediatric patient
        a. Speak softly (It is a known fact that monsters and mean people speak loudly)
            (1) Use the child's name
            (2) Adjust your height to the child's (Monsters are most threatening when they tower over you)
            (3) Look before you touch, and touch gently (Monsters are rough)
            (4) Tell the child what you are going to do then do it immediately
            (5) Never lie to a parent or a child or you will lose their trust
            (6) Enlist the parent's (care giver's) help
            (7) Attempt to keep the parent and child together

V. Initial impression - begin **actively observing** the child from the doorway
    A. Much of the assessment can be performed prior to touching (thereby upsetting) the Child
    B. General Impression of well versus sick versus very sick
        1. Pay particular attention to:
        2. Mental status
            a. How is the child interacting with environment and parents (including eye contact)
            b. What is the child's behavior?
            c. What is the child's response to the EMT?
            d. Tone/body position
                (1) Flaccid?
                (2) Is the child able to maintain an upright position?
                (3) Tripod Positioning?
        3. Color
            a. Pink?
            b. Pale?
            c. Cyanosis?
        4. Respiratory rate and effort
            a. What is the respiratory rate?
            b. Is the chest rising and falling normally?
            c. How much effort is the child making just to breathe?

d. Is the breathing noisy?

VI. Primary Assessment - During the primary assessment life threatening problems are detected and treated.

A. Responsiveness
1. Stabilize cervical spine
2. Establish unresponsiveness

B. Airway
1. Is the child speaking or does the child have a vigorous cry? If not then position head
a. Trauma - Neutral with jaw thrust
b. Medical - Sniffing or Sniff Plus
c. OPA insertion as necessary
2. Is stridor (indicates upper airway obstruction) or other evidence of upper airway obstruction present ?
a. Foreign body - FBAO procedure as per AHA guidelines
b. Swelling due to disease - Possibly croup or epiglottitis
(1) Serious medical emergency
(2) Do not agitate child
(3) Maintain position of comfort
(4) If necessary assist ventilations with a BVM
3. Is gurgling / snoring present?
a. Excessive secretions require suctioning
b. Obstruction with the tongue requires repositioning of the head or insertion of OPA / NPA as indicated

C. Breathing
1. What is the respiratory rate ?
2. Is chest rise adequate ?
3. What is the respiratory effort ?
a. Increased work of breathing
b. Retractions
c. Nasal flaring
4. What are the breath sounds ?
a. Listen at mid-axillary line for equality and abnormal breath sounds
5. Is oxygenation / ventilation adequate ?
a. Cyanosis - Central versus peripheral
b. Altered Mental State
c. If oxygenation is inadequate provide supplemental oxygen
(1) Non-Rebreather Mask (if tolerated) with 10-15 LPM flow rate
(2) Blow-by Oxygen with oxygen tubing at 6 LPM flow rate
d. If ventilations are inadequate provide assisted ventilations
(1) BVM with a reservoir
e. Are there signs of trauma to the chest ?

(1) Seal holes
(2) Stabilize fractures

D. Circulation
1. Assess the rate and quality of peripheral pulses
a. Diminished or absent peripheral pulses indicates compensated shock especially in the presence of a strong central pulse.
b. Absence of central pulses (femoral or in children older than one year brachial) indicates decompensated shock
c. Absence of carotid pulse (brachial in infants) indicates cardiac arrest
2. Assess capillary refill
a. Normal is less than 2 seconds
b. Delayed (2-4 seconds) is seen with compensated shock
c. Absent (greater than 4 seconds) is seen with decompensated shock
3. Assess skin color and temperature
a. Pale and/or cool skin can indicate shock
4. Is shock present ? If present is it compensated or decompensated
5. Is their signs / symptoms of internal and/or external bleeding ?
6. Blood pressure is difficult to measure in pediatric patients and is of limited value
7. Support circulation as necessary
a. Control bleeding
b. Elevate the legs in the absence of trauma
c. Maintain body temperature

E. Disability
1. Altered mental status is indicative of hypoxia or hypoperfusion
2. Assess the level of consciousness
3. Mental status evaluation is dependent on the patient's age
4. AVPU scale
5. Assess pupils and ability to move all four extremities
6. If collar has not been applied and is indicated, apply a rigid extrication collar

F. Expose
1. Attempt to locate all injuries
2. Maintain body temperature

G. CUPS Decision - Use pediatric CUPS Status

VII. Newborn Assessment and Management
A. Importance of the Lesson
1. Newborn resuscitation needs to be provided immediately following delivery which is most likely to be provided by the first responder

B. Newborn Assessment
1. Respiratory Effort
a. Respiratory Rate

b. Respiratory Effort
(1) Retractions, nasal flaring, chest wall movement
c. Skin Color
(1) Peripheral cyanosis is normal in the newborn
(2) Central or persistent cyanosis is worrisome

2. Perfusion
a. Heart Rate
(1) Assess by palpating umbilical cord or listening with stethoscope for heartbeat
(2) Skin Color

3. Muscle Tone
a. The newborn should have a normal grasp and movement of all extremities

C. Newborn Management
1. Warm and Dry
a. All newborns require warming and drying, this alone may stimulate breathing

2. Suctioning
a. All newborns require suctioning of the mouth and nose
b. Suctioning will stimulate the newborn to breathe
c. Always suction the mouth before the nose to prevent aspiration

3. Tactile Stimulation
a. After warming, drying and suctioning if the newborn has a poor or absent respiratory effort they may need to be stimulated
b. Tactile stimulation is accomplished by either rubbing the back or flicking the soles of the newborn

D. Blow-By oxygen and Assisted Ventilations
1. Most newborns do not require supplemental oxygen or assisted ventilations
2. Blow-by oxygen should be provided for the newborn who has either central cyanosis or prolonged peripheral cyanosis AND a normal respiratory effort and a heart rate above 100
3. If the indications for blow-by oxygen resolve the blow-by oxygen should be gradually withdrawn
4. Assisted ventilations should be provided to any newborn with either:
a. Heart rate below 100
b. Absent or poor respiratory effort despite warming, drying, suctioning and stimulating the newborn
c. Cyanosis which has not improved with blow-by oxygen
d. If the newborns indications for assisted ventilations resolve ventilations should be stopped and blow-by oxygen provided

E. Chest Compressions

1. Rarely does a newborn require chest compressions
2. If the newborn's heart rate is either below 80 and not improving despite warming, drying, tactile stimulation and 30 seconds of BVM ventilation, begin, chest compressions

VIII. Common Problems in Infants and Children

A. Airway obstructions

See current AHA guidelines on specific procedures.

1. Partial airway obstruction - infant or child who is alert and sitting.
   a. Stridor, crowing, or noisy
   b. Retractions on inspiration
   c. Pink
   d. Good peripheral perfusion
   e. Still alert, not unconscious.
   f. Emergency medical care
      (1) Allow position of comfort, assist younger child to sit up, do not lay down. May sit on parents lap.
      (2) Offer oxygen
      (3) Transport
      (4) Do not agitate child
      (5) Limited exam. Do not assess blood pressure.
2. Complete obstruction and altered mental status or cyanosis and partial obstruction.
   a. No crying or speaking and cyanosis.
      (1) Child's cough becomes ineffective
      (2) Increased respiratory difficulty accompanied by stridor
      (3) Victim loses consciousness
      (4) Altered mental status
   b. Clear airway.
      (1) Infant foreign body procedures.
      (2) Child foreign body procedures.
   c. Attempt artificial ventilations with a bag-valve-mask and good seal.

B. Respiratory emergencies

1. Common causes are:
   a. Aspiration of foreign objects
      (1) Respiratory diseases and infections
      (2) Near drowning or electrocution
      (3) Poisonings
      (4) SIDS
2. Recognize the difference between upper airway obstruction and lower airway disease.
   a. Upper airway obstruction - stridor on inspiration
   b. Lower airway disease
      (1) Wheezing and breathing effort on exhalation

(2) Rapid breathing (tachypnea) without stridor
(3) Know respiratory rates for age

3. Complete airway obstruction.
   a. No crying
   b. No speaking
   c. Cyanosis is present
   d. No coughing
4. Respiratory Assessment
   a. Check respiratory rate
      (1) Rate can be affected by many factors such as fear, fever and age
      (2) Initial response to respiratory distress is an increased respiratory rate, followed by a drop in the respiratory rate as the child fatigues
   b. Assess respiratory effort
      (1) Chest rise
      (2) Retractions
      (3) Nasal flaring
   c. Auscultate breath sounds
      (1) Should be performed at the mid-axillary line
      (2) Sounds on inspiration usually indicate upper airway problems while sounds with expiration usually represent lower airway problems
      (3) Look for asymmetry
      (4) Wheezes are a sign of small airway narrowing and reduced air flow.
   d. Inspect and palpate the chest
      (1) Are there any visible signs of trauma
   e. Assess Skin Color
      (1) Central or peripheral cyanosis
5. Respiratory Distress - Recognize signs of increased effort of breathing. Needs non rebreather mask.
   a. Early respiratory distress is indicated by any of the following:
      (1) Nasal flaring
      (2) Intercostal retraction (neck muscles), supraclavicular, subcostal retractions
      (3) Stridor
      (4) Neck and abdominal muscles - retractions
      (5) Audible wheezing
      (6) Grunting
   b. The presence of signs of symptoms of early respiratory distress and any of the following:
      (1) Rate >60
      (2) Cyanosis
      (3) Decreased muscle tone

(4) Severe use of accessory muscles
(5) Poor peripheral perfusion and color
(6) Altered mental status
(a) alert, irritable, anxious
(7) Grunting

c. Respiratory arrest/failure -
Needs assisted BVM assisted ventilations. Use the patient as medical control (i.e. any pediatric patient who will tolerate a BVM needs a BVM).
(1) Difficulty with breathing
(a) increased respiratory effort at sternal notch
(b) Breathing rate less than 10 per minute
(c) Retractions
(d) Head bobbing
(e) grunting
(f) severe accessory muscle use
(g) absent or shallow chest wall motion
(2) Limp muscle tone
(a) Decreased muscle tone or poor muscle tone (e.g. unable to maintain sitting position in infant > 4 months)
(3) Change in Mental Status
(a) sleepy
(b) intermittently combative
(c) agitated
(d) unresponsive to voice or touch
(e) Unconscious
(4) Slower, absent heart rate
(5) Difficulty with color/perfusion
(a) Central cyanosis
(b) Marked tachycardia or bradycardia
(c) Poor peripheral perfusion
(d) Weak or absent distal pulses.

d. Respiratory ailments are the primary cause of cardiac arrest, not due to trauma

6. Emergency medical care
See current AHA, ARC or NSC guidelines on specific procedures.
Maintain the airway.
a. Provide oxygen to all children with respiratory emergencies.
b. Provide oxygen and assist ventilation for severe respiratory distress.
(1) Respiratory distress and altered mental status
(2) Presence of cyanosis with oxygen
(3) Respiratory distress with poor muscle tone
(4) Respiratory failure
(5) Provide oxygen and ventilate with bag-valve-mask for

respiratory arrest.

C. Seizures
   1. Seizures in children who have chronic seizures are rarely life-threatening. However, seizures, including febrile, should be considered life-threatening by the EMT.
   2. May be brief or prolonged.
   3. Assess for presence of injuries which may have occurred during seizures.
   4. Caused by fever, infections, poisoning, hypoglycemia, trauma, decreased levels of oxygen or could be idiopathic in children.
   5. History of seizures. Ask the following questions:
      a. Has the child had prior seizure(s)?
      b. If yes, is this the child's normal seizure pattern?
      c. Has the child taken his anti-seizure medications?
   6. Emergency medical care
      a. Assure patency of airway.
      b. Position patient on side if no possibility of cervical spine trauma. Protect patient from injury.
      c. Have suction ready.
      d. Provide oxygen and if in respiratory arrest or severe respiratory distress, assure airway position and patency and ventilate with bag-valve-mask.
      e. Transport. Although brief seizures are not harmful, there may be a more dangerous underlying condition.
   7. Seizures can be caused by head injury.
   8. Inadequate breathing and/or altered mental status may occur following a seizure.

D. Altered mental status
   1. Caused by a variety of conditions
      a. Hypoglycemia
      b. Poisoning
      c. Post seizure
      d. Infection
      e. Head trauma
      f. Decreased oxygen levels
      g. Hypoperfusion (shock)
   2. Emergency medical care
      a. Assure patency of airway.
      b. Be prepared to artificially ventilate/suction.
      c. Transport.

E. Poisonings
   1. Common reason for infant and child ambulance calls
   2. Identify suspected container through adequate history. Bring container to receiving facility if possible.
   3. Emergency medical care

a. Responsive patient
   (1) Contact medical control.
   (2) Provide oxygen.
   (3) Transport.
   (4) Continue to monitor patient - may become unresponsive.
b. Unresponsive patient
   (1) Assure patency of airway.
   (2) Be prepared to artificially ventilate.
   (3) Provide oxygen if indicated.
   (4) Call medical control.
   (5) Transport.
   (6) Rule out trauma, trauma can cause altered mental status.

F. Fever
1. Common reason for infant or child ambulance call
2. Many causes - rarely life threatening. A severe cause is meningitis.
3. Fever with a rash is a potentially serious consideration.
4. Emergency medical care: Transport. Be alert for seizures.

G. Shock (hypoperfusion)

In children, like adults, most shock is secondary to trauma. However non-traumatic causes of shock exist.

1. Causes:
   a. Common:
      (1) Diarrhea and dehydration
      (2) Trauma
      (3) Vomiting
      (4) Blood loss - The loss of any amount of blood in an infant or child is can be life threatening.
         (a) Infants - 50ml
      (5) Infection
      (6) Abdominal injuries
   b. Less common:
      (1) Allergic reactions
      (2) Poisoning
      (3) Cardiac
2. Assessment of Shock (hypoperfusion)
   a. Different than for adults
   b. Blood pressure hard to measure and unreliable, especially true when < 3 years old, don't even obtain BP measurement
   c. Key assessment is peripheral perfusion and mental status
   d. Be aware that shock in a child can rapidly deteriorate
   e. Diminished or absent peripheral pulses indicates compensated shock especially in the presence of a

strong central pulse.

3. Signs and symptoms
    a. Compensated Shock
        (1) Altered mental status
        (2) Weak or absent peripheral pulses
        (3) Delayed capillary refill
        (4) Rapid pulse (tachycardia)
        (5) Cool extremities
    b. Decompensated Shock
        (1) Weak or impalpable central pulses
        (2) Extensive cyanosis of all extremities
        (3) Absence of tears, even when crying
        (4) Systolic blood pressure less than 70 mm hg.
4. Emergency medical care
    a. Assure airway / oxygen.
    b. Provide supplemental oxygen
    c. Be prepared to artificially ventilate.
    d. Manage bleeding if present.
    e. Immobilize the patient as indicated
    f. Elevate legs if no indication of trauma.
    g. Keep warm.
    h. Transport. Note need for rapid transport of infant and child patients with secondary exam completed en route, if time permits.

H. Near drowning
1. Artificial ventilation is top priority.
2. Consider possibility of trauma.
3. Consider possibility of hypothermia.
4. Consider possible ingestion, especially alcohol.
5. Protect airway, suction if necessary.
6. Secondary drowning syndrome - Deterioration after breathing normally from minutes to hours after event. All near drowning victims should be transported to the hospital.

I. Sudden Infant Death Syndrome (SIDS)
1. Characteristics
    a. Sudden death of infants in first year of life.
    b. Causes are many and not clearly understood.
    c. Baby most commonly discovered in the early morning.
2. Emergency medical care
    a. Resuscitate if indicated.
    b. Parents will be in agony from emotional distress, remorse and imagined guilt.
    c. Avoid any comments that might suggest blame to the parents.

IX. Trauma

A. Injuries are the number one cause of death in infants and children.

B. General Considerations in the Pediatric Trauma Victim

1. Most pediatric trauma is blunt trauma and arises from falls and motor vehicle accidents
2. Blunt trauma has less overt signs and has a later deterioration than penetrating trauma, therefore rely on the mechanism in the absence of overt signs and / or symptoms of serious trauma
3. Children have relatively large liver and spleen and have poor muscle protection of these organs making them extremely susceptible to injury
4. Head trauma is more prevalent in children because of the larger head to body ratio when compared with adults
   a. Infants can lose enough blood in their head to develop decompensated shock
   b. Pediatric head injury patients usually die from airway and ventilatory problems and not the actual head injury. As such control the airway and ventilation
5. Pelvic fractures can cause enough blood loss in the pediatric shock to cause hypovolemic shock
6. What may seem like a small blood loss may be relatively extensive when compared to the child's smaller blood volume

C. Blunt injury is most common.

1. The pattern of injury will be different from adults.
   a. Motor vehicle crashes
      (1) Motor vehicle passengers
         (a) Unrestrained passengers have head and neck injuries.
         (b) Restrained passengers have abdominal and lower spine injuries.
      (2) Struck while riding bicycle - head injury, spinal injury, abdominal injury
      (3) Pedestrian struck by vehicle - abdominal injury with internal bleeding, possible painful, swollen, deformed thigh, head injury.
   b. Falls from height, diving into shallow water - head and neck injuries
   c. Burns
   d. Sports injuries - head and neck
   e. Child abuse

D. Specific body systems

1. Head
   a. The single most important maneuver is to assure an open airway by means of the modified jaw thrust combined with a neutral head position.
   b. Children are likely to sustain head injury along with internal

injuries. Signs and symptoms of shock (hypoperfusion) with a head injury should cause you to be suspicious of other possible injuries.

c. Respiratory arrest is common secondary to head injuries and may occur during transport.

d. Common signs and symptoms are nausea and vomiting.

e. Most common cause of hypoxia in the unconscious head injury patient is the tongue obstructing the airway. Jaw-thrust is critically important.

f. Do not use sandbags to stabilize the head because the weight on child's head may cause injury if the board needs to be turned for emesis.

2. Pediatric Cervical Spinal Stabilization and Immobilization

a. Manual stabilization

(1) Initially provide manual stabilization while maintaining an adequate airway

b. Cervical Collars

(1) Initially assure that the head is in a neutral position

(2) Choose a collar of appropriate size based on manufacturers recommendations

(3) Towels can be used in place of a cervical collar for infants that do not fit in the available collars.

3. Spinal Immobilization

a. Immobilization of pediatric patients should account for their anatomical differences

(1) Children are shorter than adults - use backboards which have strap holes at multiple locations or use a short backboard.

(2) Children are narrower than adults - it may be necessary to pad along the sides to insure a snug fit of the straps.

(3) Small children have a large occiput - pad under the upper torso to insure neutral alignment of the cervical spine.

b. Assure that a cervical collar is in place prior to moving patient to the backboard.

c. Place a child on the backboard using standard patient moves for a spinal injury patient

d. Secure the chest, pelvis and knees and then the head

4. Chest

a. Children have very soft pliable ribs.

b. There may be significant injuries without external signs.

5. Abdomen

a. More common site of injury in children than adults.

b. Often a source of hidden injury.

c. Always consider abdominal injury in the multiple trauma

patient who is deteriorating without external signs.
d. Air in stomach can distend abdomen and interfere with artificial ventilation efforts.

6. Extremities - extremity injuries are managed in the same manner as adults.

E. Other trauma considerations
1. Criticality of burns
a. Cover with sterile dressing (non-adherent, if possible, sterile sheets may be used).
b. Identify candidates for burn centers per local protocol.

F. Emergency medical care
1. Maintain an adequate airway while manually stabilizing the cervical spine
2. Assure airway position and patency. Use modified jaw thrust.
3. Suction as necessary with large bore suction catheter.
4. Provide oxygen.
5. Assist ventilations for severe respiratory distress and ventilate with a bag-valve-mask for respiratory arrest.
6. Support circulation
7. Provide spinal immobilization.
8. Transport immediately.

X. Child Abuse and Neglect

A. Definition of abuse - improper or excessive action so as to injure or cause harm.

B. Definition of neglect - giving insufficient attention or respect to someone who has a claim to that attention.

C. EMT-Basic must be aware of condition to be able to recognize the problem.

D. Physical abuse and neglect are the two forms of child abuse that the EMT-Basic is likely to suspect.

E. Signs and symptoms of abuse
1. Multiple bruises in various stages of healing.
2. Injury inconsistent with mechanism described.
3. Repeated calls to the same address.
4. Fresh burns.
5. Parents seem inappropriately unconcerned.
6. Conflicting stories
7. Fear on the part of the child to discuss how the injury occurred.

F. Signs and symptoms of neglect
1. Lack of adult supervision.
2. Malnourished appearing child.
3. Unsafe living environment
4. Untreated chronic illness; e.g., asthmatic with no medications.

G. CNS injuries are the most lethal - shaken baby syndrome

H. Do not accuse in the field

1. Accusation and confrontation delays transportation.
2. Bring objective information to the receiving facility

I. Reporting - Refer to Part 800.21
1. Local regulations
2. Objective - what you see and what you hear - NOT what you think.

XI. Infants and Children with Special Needs
A. This can include many different types of children.
1. Premature babies with lung disease
2. Babies and children with heart disease
3. Infants and children with neurologic disease
4. Children with chronic disease or altered function from birth
B. Often these children will be at home, technologically dependent.
1. Tracheostomy tube
a. Various types
b. Complications
(1) Obstruction
(2) Bleeding
(3) Air leak
(4) Dislodged
(5) Infection
c. Emergency medical care
(1) Maintain an open airway.
(2) Suction.
(3) Maintain position of comfort.
(4) Transport.
2. Home artificial ventilators
a. Various types
b. Parents familiar with operation
c. Emergency medical care
(1) Assure airway
(2) Artificially ventilate with oxygen
(3) Transport
C. Central Lines
1. Intravenous lines (IVS) that are placed near the heart for long term use
2. Complications
a. Cracked line
b. Infection
c. Clotting off
d. Bleeding
3. Emergency medical care
a. If bleeding, apply pressure.
b. Transport.
D. Gastrostomy tubes and gastric feeding
1. Description - tube place directly into stomach for feeding. Comes

in many shapes. These patients usually cannot be fed by mouth.

2. Be alert for breathing problems.
    a. Assure adequate airway.
    b. Have suction available.
    c. If a diabetic patient, be alert for altered mental status. Infant will become hypoglycemic quickly if they cannot be fed.
    d. Provide oxygen.
    e. Transport
        (1) Sitting
        (2) Lying on right side, head elevated

E. Shunts
1. Description - device running from brain to abdomen to drain excess cerebral spinal fluid. Will find reservoir on side of skull.
2. Change in mental status
3. Prone to respiratory arrest
    a. Manage airway.
    b. Assure adequate artificial ventilation.
    c. Transport.

XII. Family Response
A. A child cannot be cared for in isolation from the family; therefore, you have multiple patients.
B. Striving for calm, supportive interaction with family will result in improved ability to deal with the child.
1. Calm parents = calm child; agitated parents = agitated child
2. Anxiety arises from concern over child's pain; fear for child's well-being
3. Worsened by sense of helplessness
C. Parent may respond to EMT-Basic with anger or hysteria.
D. Parents should remain part of the care unless child is not aware or medical conditions require separation.
E. Parents should be instructed to calm child; can maintain position of comfort and/or hold oxygen.
F. Parents may not have medical training, but they are experts on what is normal or abnormal for their children and what will have a calming effect.

XIII. Provider Response
A. Anxiety from lack of experience with treating children as well as fear of failure.
B. Skills can be learned and applied to children.
C. Stress from identifying patient with their own children.
D. Provider should realize that much of what they learned about adults applies to children; they need to remember the differences.
E. Infrequent encounters with sick children; advance preparation is important (practice with equipment and examining children).
F. Encounters with sick or injured children may result in adverse emotional

response by the EMT-B.

G. Critical Incident Stress Management (CISM) programs have been helpful in assisting EMS personnel to manage their normal response to these stressful situations.

Suggested Application

Procedural (How)

1. Demonstrate the techniques of foreign body airway obstruction removal in the infant.
2. Demonstrate the techniques of foreign body airway obstruction removal in the child.
3. Demonstrate bag-valve-mask artificial ventilations for the infant.
4. Demonstrate bag-valve-mask artificial ventilations for the child.
5. Demonstrate oxygen delivery for the infant and child.
6. Demonstrate the assessment of the infant and child.
7. Demonstrate in line cervical immobilization with and without artificial ventilation in infants and children.

Contextual (When, Where, Why)

Recognize physical and developmental peculiarities of infants and children of different ages and modify approach accordingly. The EMT-Basic must have an understanding of the unique aspects of dealing with infants and children. In addition, the EMT-Basic must realize the aspect of having multiple patients. A child cannot be cared for isolated from the family. A calm, professional reassuring EMT-Basic may help to minimize psychological impact of transport to parent and child.

STUDENT ACTIVITIES

Auditory (Hear)

1. Students should hear various infant and child airway sounds.
2. Students should hear the normal systolic and diastolic blood pressure sounds.
3. Students should hear parent information.

Visual (See)

1. Students should see audio-visual aids or materials of infant and child patients with common medical or traumatic complaints.
2. Students should see various infant or child equipment.

Kinesthetic (Do)

1. Students should practice working with the various infant and child devices that are available in their area.
2. Students should practice the techniques of foreign body airway obstruction removal in the infant.
3. Students should practice the techniques of foreign body airway obstruction removal in the child.
4. Students should practice bag-valve-mask artificial ventilations for the infant.

5. Students should practice bag-valve-mask artificial ventilations for the child.
6. Students should practice oxygen delivery for the infant and child.
7. Students should practice the assessment of the infant and child.
8. Students should practice in-line cervical immobilization and transportation of infant and child patients.

INSTRUCTOR ACTIVITIES

Supervise student practice.
Reinforce student progress in cognitive, affective, and psychomotor domains.
Redirect students having difficulty with content (complete remediation forms).

Evaluation

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

Remediation

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

Suggested Enrichment

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan.

MODULE 6
Infants and Children

Lesson 6-2
Practical Lab

Objectives

COGNITIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- None

AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate the affective objectives of Lesson 6-1: Infants and Children.

PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate the psychomotor objectives of Lesson 6-1: Infants and Children.

Preparation

Motivation: The practical lesson is designed to allow the students additional time to perfect skills. It is of utmost importance that the students demonstrate proficiency of the skill, cognitive knowledge of the steps to perform a skill, and a healthy attitude towards performing that skill on a patient. This is an opportunity for the instructor and assistant instructors to praise progress and re-direct the students toward appropriate psychomotor skills. The material from all preceding lessons and basic life support should be incorporated into these practical skill sessions.
The skills necessary for initial pediatric resuscitation are purely Basic Life Support and within the scope of the EMT fundamental EMS principles such as the ABC's and Primary Assessment.

Prerequisites: BLS, Preparatory, Airway, Patient Assessment, Medical/Behavioral and Obstetrics/Gynecology and Trauma.

MATERIALS

AV Equipment: Typically none required.

EMS Equipment: Equipment from the list in Lesson 6-1.

Reference Material: Instructors must refer to the latest edition of the JAMA guidelines regarding airway management and cardio-pulmonary resuscitation.

PERSONNEL

Primary Instructor:	One EMT-Basic instructor, knowledgeable with infants and children.
Assistant Instructor:	The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in infant and child emergencies.
Recommended Minimum Time to Complete:	Three hours

PRESENTATION

At each station the CIC/CLI will demonstrate the skill, foster group practice and then reinforce the skill with a scenario. The stations are as follows:

Pediatric Patent Assessment

Demonstration

The instructor will demonstrate the following skills:

Approach to the pediatric patient
Assessment from a distance
Primary Assessment

Skill Practice

The instructor will facilitate the students practice of the following skills:

Approach to the pediatric patient
Assessment from a distance
Primary Assessment

Scenarios

The instructor will facilitate the students participation in the following scenarios:

General Approach Scenario 1

You are responding to a call for a 2 year old child with difficulty breathing. From the doorway, describe the observations you would make.

General Impression: Child is standing up, screaming. Does not appear very sick.
Mental Status: Child looks at you and begins to cling to his mother.
Body Position: Child climbs up and sits on mother's lap.
Skin Color: Child is not pale or cyanotic.
Respiratory Rate & Effort: Chest rises and falls normally, rate is 24/min.

From these observations, what can you tell about the primary assessment of this child?

Airway: Open because he is crying.
Breathing: Rate and Effort are normal.
Circulation: Is probably adequate.
Disability: Mental State is alert, extremity movement is normal.

From the doorway, what is the CUPS status of this child? **Stable**

General Approach and Primary Assessment Scenario 2

You are responding to a call for a 2 year old child with difficulty breathing. From the doorway, describe the observations you would make.

General Impression: Child is lying quietly on his bed. His eyes are half open. He seems sick.
Mental Status: Child looks at you but does not protest at your presence.
Body Position: Child is supine.
Skin Color: Child is pale.
Respiratory Rate & Effort: Chest rises and falls rapidly, rate is 44/min. Despite the rapid rate, he is breathing quietly. From these observations, what can you tell about the primary assessment of this child?

Airway: Needs to be evaluated.
Breathing: Elevated rate, needs oxygen.
Circulation: Needs further evaluation.
Disability: Mental state is altered. Needs further evaluation.

From the doorway, can you make a CUPS determination for this child? (N0.)

Student should now perform Primary Assessment of the patient. As the student completes each step, provide the following information:

Responsiveness: Child looks at you when you speak to him.
Airway: He moans. No gurgles or stridor are heard.
Breathing: Rate is 44/min. No retractions or nasal flaring are noted.
No deformities or trauma are noted to the chest.
Lung sounds are equal bilaterally.
The patient accepts a nonrebreather mask.
Circulation: There is no obvious bleeding. Capillary Refill is 3 seconds.
Pedal pulse is weak, femoral pulse is strong. Rate is rapid.
Skin is pale, hot and dry.
Disability: His mother tells you he is “not himself” and that he hasn’t been responding to her normally. Pupils ERRL: Extremity movement normal, but not spontaneous.
Expose: No injuries or abnormalities are discovered.
CUPS Determination: Unstable due to signs of compensated shock: AMS, weak peripheral pulse, pallor, delayed capillary refill.

General Approach and Primary Assessment Scenario 3

You are responding to a call for a 2 year old child with difficulty breathing. From the doorway, describe the observations you would make.

General Impression: Child is being held by his mother and is draped across her chest, resting his head comfortably on her shoulder. He becomes anxious when he see you and turns his face away from you.
Mental Status: Child tightens his grip on his mother, but peeks at you a few times.
Body Position: Being held by his mother.
Skin Color: Child has flushed cheeks.
Respiratory Rate & Effort: Chest rises and falls with some retractions noted. Rate is 28/min. The child has a odd sounding cough and noisy respirations. From these observations, what can you tell about the primary assessment of this child?

Airway: Is possibly compromised.
Breathing: Rate is slightly elevated, and effort indicates the need for oxygen.
Circulation: No obvious hypoperfusion.
Disability: Mental state is alert.

From the doorway, can you make a CUPS determination for this child?
Potentially unstable due to respiratory distress.
Student should now perform Primary Assessment of the patient. As the student completes each step, provide the following information:

Responsiveness: Child looks at you and turns away when you speak to him.
Airway: Respirations are noisy and stridor is heard.
Breathing: Rate is 28/min. Intercostal retractions and nasal flaring are noted. Lung sounds are clear and equal. No deformities or trauma are noted to the chest. The patient pushes the oxygen mask away. Mother can assist with blow-by oxygen.
Circulation: There is no obvious bleeding. Capillary Refill is less than 2 seconds. Radial pulse is strong, carotid pulse is strong. Rate is slightly rapid. Skin is flushed, warm.
Disability: His mother easily engages him in conversation. Pupils PERRLA: Extremity movement normal, but not spontaneous.
Expose: No injuries or abnormalities are discovered.
CUPS Determination: Potentially unstable due to signs of respiratory distress.

Respiratory Assessment and Management

Demonstration

The instructor will demonstrate the following skills:

Respiratory Assessment
Airway Skills
Head tilt/ chin lift (position varies with age)
Modified jaw thrust
Suctioning
Foreign body removal
Oral airway sizing and insertion technique
Ventilation
Supplemental oxygen delivery - Non-rebreather & Blow-by
BVM mask sizing
BVM mask seal/ two handed mask seal
Mouth to mask ventilation infant/ children
Use of BVM infant/children
Ventilation with C-Spine immobilization

Skill Practice

The instructor will facilitate the students practice of the following skills:

Respiratory Assessment
Airway Skills
Head tilt/ chin lift (position varies with age)
Modified jaw thrust
Suctioning
Foreign body removal
Oral airway sizing and insertion technique
Ventilation
Supplemental oxygen delivery - Non-rebreather & Blow-by
BVM mask sizing
BVM mask seal/ two handed mask seal
Mouth to mask ventilation infant/ children
Use of BVM infant/children
Ventilation with C-Spine immobilization

Scenarios

The instructor will facilitate the students participation in the following scenarios:

Shock (Hypoperfusion) / Trauma Assessment and Management

Demonstration

The instructor will demonstrate the following skills:

Circulation

Identify brachial/femoral pulses
Identify peripheral pulses
Assess capillary refill
Assess skin color and temperature
Size bp cuff for children older than 3 years
Obtain bp
Control bleeding

Immobilization

Manual stabilization of the cervical spine
Identification of an appropriate size rigid collar
Application of a rigid collar in infant/ toddler/ child
Improvising when the collars don't fit
Securing a pediatric patient to a backboard
Padding back to maintain neutral spinal alignment

Skill Practice

The instructor will facilitate the students practice of the following skills:

Circulation

Identify brachial/femoral pulses
Identify peripheral pulses
Assess capillary refill
Assess skin color and temperature
Size bp cuff for children older than 3 years
Obtain bp
Control bleeding

Immobilization

Manual stabilization of the cervical spine
Identification of an appropriate size rigid collar
Application of a rigid collar in infant/ toddler/ child
Improvising when the collars don't fit
Securing a pediatric patient to a backboard
Padding back to maintain neutral spinal alignment

Scenarios

The instructor will facilitate the students participation in the following scenarios:

Shock/Hypoperfusion Assessment and Management Scenario 1

You are responding to a pedestrian struck. Upon arrival, you find your patient to be a 6 year old who is lying on the street about 20 feet from the car which hit him. The child appears to be unconscious as you approach. There is obvious deformity to the right leg and the clothing over the chest and abdomen is torn. Please demonstrate how you will assess the patient.

As the student completes each step, provide the following information:

Responsiveness:	No response to voice or touch. Student should perform: Manual stabilization of the head and neck. Modified jaw thrust with the head in a neutral position. There is breathing and a carotid pulse.
Airway:	Gurgling sounds are heard. Student should suction, place OPA.
Breathing:	Chest rise is slight. Respiratory rate is irregular at 12/min. Lung sounds are faint. There are abrasions over the chest and abdomen. Student should begin assisted ventilations with supplemental oxygen at a rate of at lest 25/min
Circulation:	There is no serious hemorrhage noted. Capillary refill is 4 seconds. Pulses are strong carotid but weak radial.
Disability:	Patient is unresponsive to all stimuli. Pupils are unequal. Cervical collar should be placed.
Expose:	In addition to the above injuries, you find a large deformity over the middle of the right thigh.
CUPS:	Critical/CPR as the patient is being ventilated. What are your priorities at this time? Prepare for transport, continuous monitoring of the ABCs.

Student should log roll the patient onto a long board on which there is a thin padding such as a large trauma dressing which will pad under the torso to maintain spinal alignment. The torso and then the head should be secured using a headbed or blanket roll.

Shock/Hypoperfusion Scenario 2

You are responding to a call for an unconscious child. Upon arrival, the father tells you that his 8 month old has had fever, vomiting and diarrhea for three days and now has grown extremely weak. As you approach the child, who is supine on the sofa, you see areas of the child's skin which are discolored and blotchy. Please demonstrate your assessment of this patient.

As the student completes each step, provide the following information:

Responsiveness:	Patient withdraws from a shoulder pinch. There is breathing and a weak brachial pulse.
Airway:	Is open. Patient will not accept an OPA.
Breathing:	Rate is 52/min: Effort seems normal, chest rise and fall is regular. Lung sounds are present and equal. There is no evidence of trauma. Patient accepts a non-rebreather mask.
Circulation:	No hemorrhage is found. Capillary refill is 3 seconds. Peripheral pulses are absent. Femoral and brachial are weak & very rapid. Skin on both upper and lower extremities is cold and cyanotic. The patient should be covered to maintain body temperature.
Disability:	Patient is responsive to pain. Pupils are sluggish.
Expose:	No further injuries are found.
CUPS:	Unstable due to decompensated shock.

What are your priorities at this time?
Prepare for transport, continuous monitoring of the ABCs, prepare to assist ventilations, CPR.

Newborn Assessment and Management

Skill Demonstration and Practice

Skill Demonstration

The instructor will demonstrate the simultaneous assessment and management of the newborn

Skill Practice

The instructor will facilitate the students practicing the simultaneous assessment and management of the newborn

Scenarios

The instructor will facilitate the students participation in the following scenarios:

Newborn and Infant Resuscitation Scenario 1

You are responding to a call for a woman in labor. When you arrive you find that the baby is about to be born. The head has already delivered. While another CFR attends to the mother, describe what actions you would take at this time to care for the baby.

Delivery: Observe universal precautions.
Check for umbilical cord around neck.
Suction mouth and nose.
Gently support and guide baby's head through the birth.
Clamp and cut the umbilical cord.

The baby has now been born. Please demonstrate the assessment and management of this newborn.

Warm and Dry: Dry the baby and warm by wrapping in a blanket / swaddler.
Suction: With a bulb syringe suction the mouth and nose.
The baby now begins to cry.

What further actions would you take?

Breathing: Assess the respiratory rate and effort.
The respirations are 40/minute with good respiratory effort.
Circulation: Assess the pulse.
The heart rate is 130 beats per minute.

What other tasks should be performed now?
Reassess the respirations and heart rate frequently.
Maintain warm and dry

Newborn and Infant Resuscitation Scenario 2

You are responding to a call for a woman in labor. When you arrive you find that the baby was born about 5 minutes ago. The baby is limp, centrally and peripherally cyanotic. You cannot detect any chest rise.

While another CFR attends to the mother, demonstrate what actions you would take at this time to care for the baby.

Warm and Dry: Dry the baby and warm by wrapping in a blanket / swaddler.
Suction: With a bulb syringe suction the mouth and nose.
Stimulate: Stimulate the baby by rubbing the back and flicking the soles

The baby is still limp, centrally and peripherally cyanotic. You cannot detect any chest rise.

Breathing: Open the airway by head tilt, chin lift. (Put small towel or dressing under shoulders to aid in maintaining correct position if necessary.)
Look, listen and feel for breathing. The patient is not breathing.
Ventilate the baby with a BVM, oxygen and reservoir for 15-30 seconds at a rate of 40-60/min. Ventilations are adequate if the chest rises.

Circulation: Check the brachial pulse. Pulse is 50 despite 15-30 seconds of ventilation with a BVM and supplemental oxygen.
Initiate chest compressions at a rate of 120/min and interpose a ventilation after every 3rd compression. Recheck pulse rate every 30 seconds. After 30 seconds heart rate climbs to 60. Continue compressions and ventilations.
After 1 minute, heart rate climbs to 80. Continue compressions and ventilations.
After 90 seconds heart rate is 110. Stop compressions and assess respiratory effort and rate.

After compressions have been stopped the student should demonstrate the following assessment and management:

Breathing: Assess respiratory rate and effort
Patient has a respiratory rate of 30 and rising with a good effort.
Stop assisted ventilations and provide blow-by oxygen
As the child's central color improves gradually withdraw the blow-by oxygen.

Circulation: Reassess the heart rate. Pulse is 140 beats per minute and strong.

What other tasks need to be accomplished?
Reassess the respirations and heart rate frequently.
Maintain warm and dry

Suggested Application

Procedural (How)

Instructor should demonstrate the procedural activities from Lesson 6-1: Infants and Children.

Contextual (When, Where, Why)

Instructor should review contextual information from Lesson 6-1: Infants and Children.

STUDENT ACTIVITIES

Auditory (Hear)

The students should hear the auditory information from Lesson 6-1: Infants and Children.

Visual (See)

The students should see the visual material from Lesson 6-1: Infants and Children.

Kinesthetic (Do)

The students should practice the kinesthetic activities from Lesson 6-1: Infants and Children.

INSTRUCTOR ACTIVITIES

Supervise student practice.
Reinforce student progress in cognitive, affective, and psychomotor domains.
Redirect students having difficulty with content (complete remediation forms).

Evaluation

Practical: Evaluate the actions of the EMT-Basic students during role play, practice or other skills stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

Remediation

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

Suggested Enrichment

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan.

MODULE 6
Infants and Children

Lesson 6-3
Evaluation

Objectives

COGNITIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the cognitive objectives of Lesson 6-1: Infants and Children

AFFECTIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the affective objectives of Lesson 6-1: Infants and Children.

PSYCHOMOTOR OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- Demonstrate knowledge of the psychomotor objectives of Lesson 6-1: Infants and Children.

Preparation

Motivation: Evaluation of the students attainment of the cognitive and affective knowledge and psychomotor skills is an essential component of the EMT-Basic educational process. The modules are presented in a "building block" format. Once the students have demonstrated their knowledge and proficiency, the next lesson should be built upon that knowledge. This evaluation will help to identify students or groups of students having difficulty with a particular area. This is an opportunity for the instructor to evaluate his performance, and make appropriate modifications to the delivery of material.

Prerequisites: Completion of Lessons 6-1 and 6-2.

MATERIALS

AV Equipment: Typically none required.

EMS Equipment: Equipment required to evaluate the students proficiency in the psychomotor skills of this module.

PERSONNEL

Primary Instructor: One proctor for the written evaluation.

Assistant Instructor: One practical skills examiner for each 6 students.

Recommended Minimum
Time to Complete: One hour

Presentation

Declarative (What)

I. Purpose of the evaluation

II. Items to be evaluated

III. Feed back from evaluation

Suggested Application

Procedural (How)

1. Written evaluation based on the cognitive and affective objectives of Lesson 6-1.

2. Practical evaluation stations based on the psychomotor objectives of Lesson 6-1.

Contextual (When, Where and Why)

The final lesson in this module is designed to bring closure to the module, and to assure that students are prepared to move to the next module.

This modular evaluation is given to determine the effectiveness of the presentation of materials and how well students have retained the material. This is an opportunity for the students to make necessary adjustments in study habits or for the instructor to adjust the manner in which material is presented.

INSTRUCTOR ACTIVITIES

Supervise student evaluation.
Reinforce student progress in cognitive, affective, and psychomotor domains.
Redirect students having difficulty with content (complete remediation forms).

Remediation

Identify students and/or groups of students who are having difficulty with this subject content. Complete a remediation sheet from the instructor's course guide. If students continue to have difficulty demonstrating knowledge of the cognitive and affective objectives, or demonstrating proficiency in psychomotor skills, the students should be counseled, remediated and re-evaluated. If improvements in cognitive, affective or psychomotor skills are not achieved, consideration regarding the ability of the student to progress in the program should be taken into account.